Fig. 1.

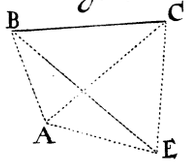


Fig. 2.

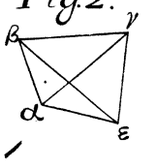


Fig. 3.

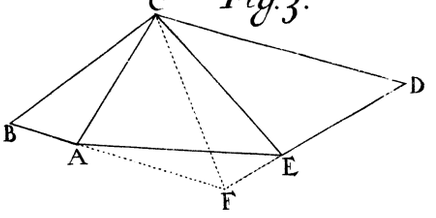


Fig. 4.

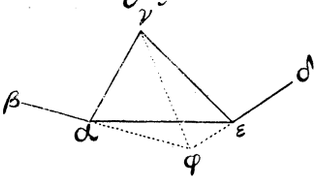


Fig. 5.

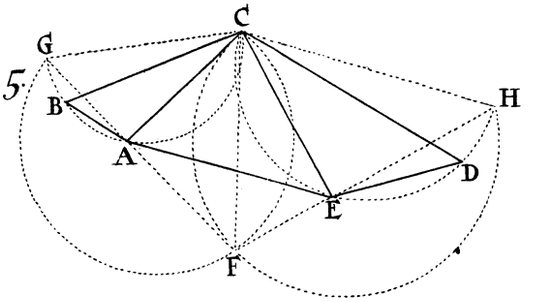
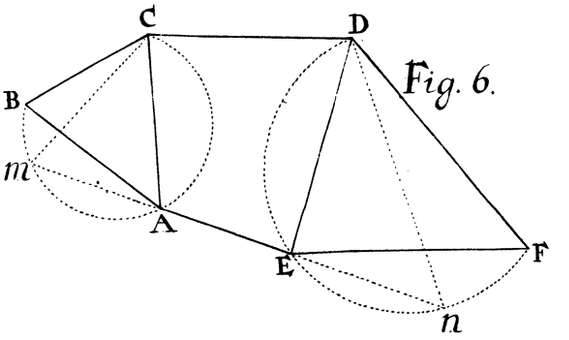


Fig. 6.



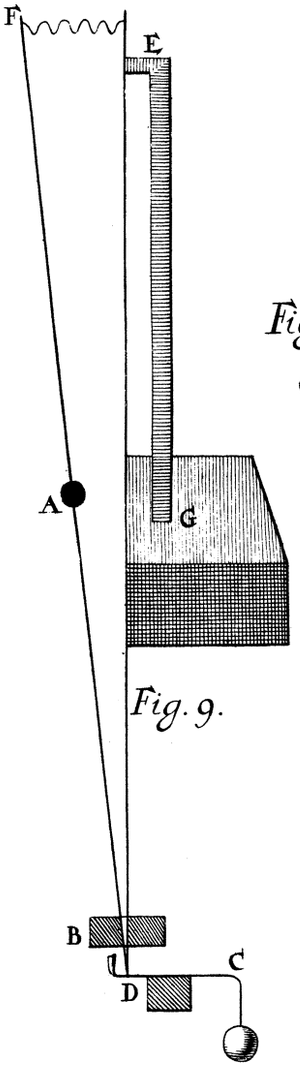


Fig. 9.

Fig. 7.

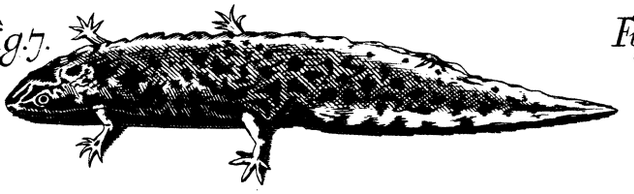


Fig. 8.

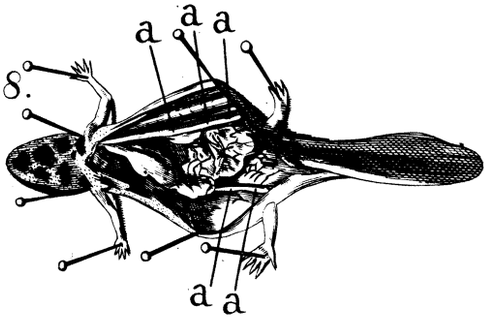


Fig. 10.

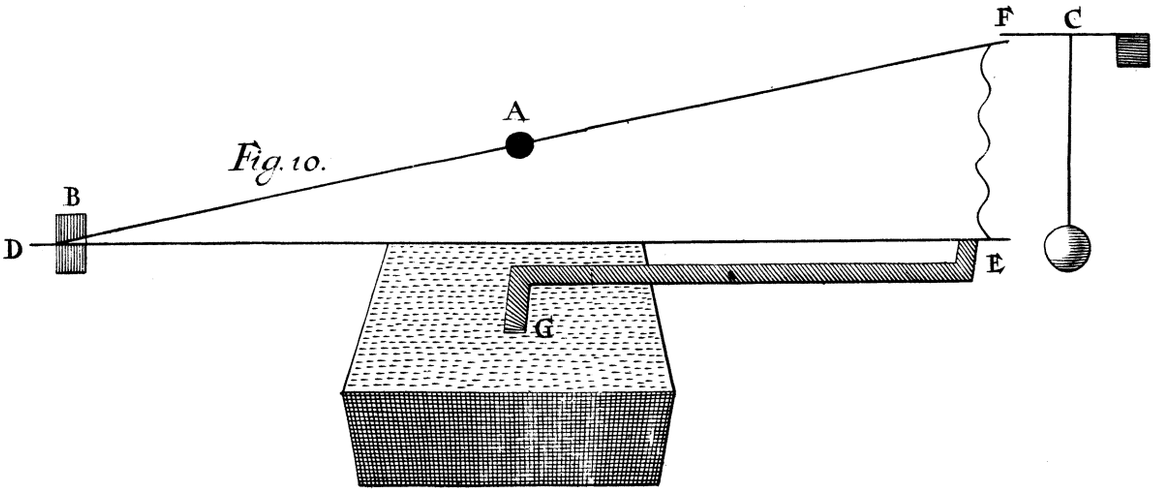
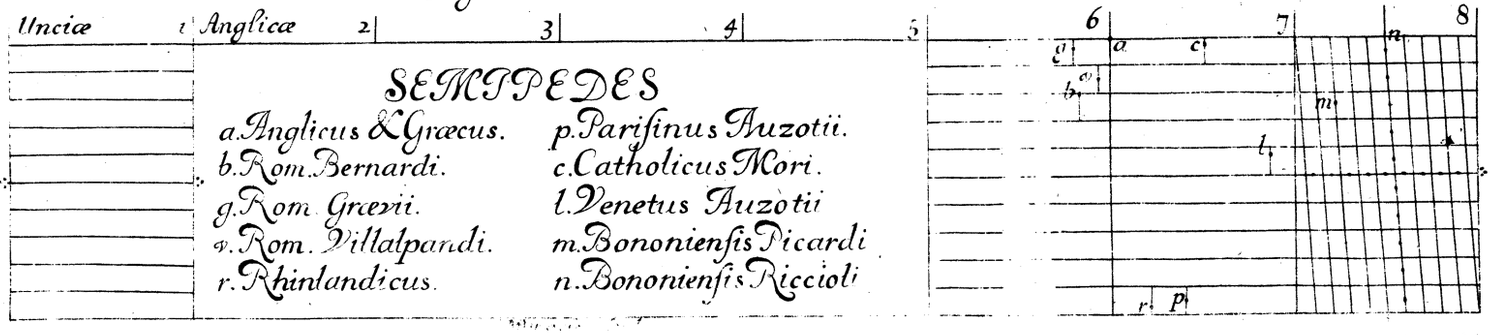


Fig. 11.



Obſervations of Dr Papin, Fellow *of the* Royal Society, *on a French Paper concerning a* Perpetual Motion.

THE Paper printed in *French* and containing a contrivance for a perpetual motion, being ſet down in ſuch a manner, that can hardly be underſtood but by thoſe that are much acquainted with ſuch deſcriptions: I have endeavour'd to explain it as follow's.

Let *D E F* Fig. 9. be a pair of bellow's 40 inches long, that may be open'd by removing the part *F* from *E:* let them be exactly ſhut every where but at the aperture *E*; and let a pipe *E G*, 20 or 22 inches long, be ſoddered to the ſay'd aperture *E*, having its other end in a Veſſel *G*, full of Mercury, and placed near the middle of the bellow's.

A, Is an axis for the bellow's to turn upon.

B, A counterpoiſe faſtened to the lower end of the bellows.

C, A weight with a claſp to keep the bellow's upright.

Now if we ſuppoſe the bellow's open'd only to $\frac{1}{3}$ or $\frac{1}{4}$ ſtanding upwright as Fig. 9th. and full of Mercury, it is plain that the ſayd Mercury being 40 inches high, muſt fall, as in the Torricellian experiment, to the heigth of about 27 inches, and conſequently the bellow's muſt open towards *F* and leave a vacuity there: this vacuity muſt be fill'd with the Mercury aſcending from *G* through the Pipe *G E*, the ſayd Pipe being but 22 inches long: by this means the bellow's muſt be opened more and more till the Mercury continuing to aſcend make's the upper part of the bellow's ſo heavy, that the lower part muſt get looſe from the claſp *C*, and the bellow's ſhould turn quite upſide down; but the Veſſel *G* being ſet in a convenient place keeps them horizontall as Fig. 10, and the

part

part *F* engageth there in another Claſp *C*; then the Mercury by its weight runs out from the bellows into the Veſſel *G* through the Pipe *EG*, and the bellow's muſt ſhut cloſer and cloſer untill the part *EF* comes to be ſo light, that the counterpoiſe *B* is able to make the part *F* get looſe from the claſp *C*; then the bellow's come to be upright again as Fig. 9th; the Mercury left in them fall's again to the heigth of 27 inches, and conſequently all the other effects will follow as we have already ſeen, and the motion will continue for ever. Thus much the *French Author*.

Upon this it is to be obſerved; that the bellow's can never be opened by the internal preſſure, unleſs the ſayd preſſure be ſtronger then the externall: now in this caſe the weight of the *Atmoſphere* doth freely preſs up the outward part of the bellow's, but it cannot come at the inward part but through the Pipe *GE*, which containing 22 perpendicular inches of Mercury, doth counterpoiſe ſo much of the weight of the *Atmoſphere*, ſo that this being ſuppoſed to be 27 inches of Mercury, it cannot preſs the inward part of the bellow's but with a weight equivalent to 5 perpendicular inches of Mercury. From this we may conclude, that the preſſure of the *Atmoſphere* being weakned within the bellow's, more then it can be helpt by the Mercury contain'd in the ſame, as may eaſily be computed; the ſayd bellow's ſtanding upright as Fig. 9th; muſt rather ſhut then open. Thus, without looſing any labour and charges in trying, people may be ſure that the thing can never do.